FEB 27 2007

REMARKS[1]

In the outstanding Office Action, the Examiner rejected claims 1, 2, and 5 under 35 U.S.C. § 102(b) as being anticipated by State et al., "Superior Augmented Reality Registration by Integrating Landmark Tracking and Magnetic Tracking," Proceedings of SIGGRAPH '96, 1996, pages 429-438 ("State"); rejected claims 6-10 under 35 U.S.C. § 103(a) as being unpatentable over State; and rejected claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over State in view of Drettakis et al., "Interactive Common Illumination for Computer Augmented Reality," Rendering Techniques '97 from the 8th EG Workshop on Rendering, 1997, pages 45-56 ("Drettakis"). No claims are amended herein. Claims 1-10 remain pending in this application.

I. Rejection under 35 U.S.C. § 102(b)

Applicants respectfully traverse the Examiner's rejection of claims 1, 2, and 5 under 35 U.S.C. § 102(b). In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." *See* MPEP § 2131, 8th Ed. (Rev. 5), August, 2006. State cannot anticipate claims 1, 2, and 5 because that reference fails to teach each and every element recited in claims 1, 2, and 5.

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[1] The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement of characterization in the Office Action.

For example, State fails to teach "comparing the position of the light source and a virtual position of a display object in a three-dimensional image displayed in real space to obtain a relative positional relation therebetween," as recited in claim 1, and similarly recited in claim 5. The Examiner asserts that State teaches this element, citing State at page 437, 3rd paragraph, stating:

> [h]ere, in order for the light source to cause virtual shadowing behind the three-dimensional image (where the three dimensional image is the know) the positions of both the light source and the object would have to be known ... in order to correct the virtual shadows in response to the light cast from the light source. Office Action, page 3.

Even if the Examiner's assertion could be considered to be correct, State fails to teach "comparing the position of the light source and a virtual position of a display object in a three-dimensional image displayed in real space to obtain a relative positional relation therebetween," as recited in claim 1, and similarly recited in claim 5 (emphasis added), as further discussed below.

State teaches an augmented reality system which uses a head mounted display (HMD), cameras mounted on the HMD, a magnetic tracker also attached to the HMD, and a graphics workstation for processing data to be displayed. See, e.g., State, page 430, section 4. State further teaches that "[t]he hybrid tracker analyzes sensor data from two input streams: real-time video images from the stereo cameras, and tracking reports from the magnetic tracking sensor." State, page 430, section 5. That is, State teaches a system which displays real-time video to a user wearing a HMD, and graphically augments the displayed video through the use of the graphics workstation, and accurately intertwines the two through the use of data acquired from the hybrid tracker system. In the portion cited by the Examiner, State teaches "Figure 8

-3-

demonstrates a virtual object, a knot, casting a shadow on a real object, a sculpture."

State at page 437, 3rd paragraph (emphasis added). Here, the sculpture cannot

constitute "a three-dimensional image displayed in real space," as recited in claim 1,

and similarly recited in claim 5, for at least the reasons that it is not an "image," and that

it is not "displayed." Accordingly, State cannot teach a combination including

"comparing the position of the light source and a virtual position of a display object in a

three-dimensional image displayed in real space to obtain a relative positional relation

therebetween," as recited in claim 1, and similarly recited in claim 5.

Moreover, State also fails to teach "shading in the three-dimensional image

[displayed in real space]," as also recited in claim 1, and similarly recited in claim 5.

The Examiner asserts that State teaches this element, stating "Figure 9 shows shading

on the three-dimensional image itself (where the three dimensional image is the knot)."

Office Action, page 4. As discussed above, however, the knot of State is displayed only

on the HMD display, and could possibly provide shading only to objects as displayed on

the HMD, not on the objects as they are displayed in real space. That is, even if the

Examiner's assertion is correct that State teaches shading in a real object, the object as

it exists in real space is not shaded in. Rather, the object as displayed on the HMD is

shaded in. Accordingly, State also fails to teach a combination including "shading in the

three-dimensional image [displayed in real space]," as also recited in claim 1, and

similarly recited in claim 5.

For at least the reason that State fails to teach each and every element recited in

claims 1 and 5, State cannot anticipate claims 1 and 5. Claims 1 and 5 are thus

allowable over State, and claim 2 is allowable at least because of its dependence from

claim 1. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1, 2, and 5 under 35 U.S.C. § 102(b).

II.   Rejections under 35 U.S.C. § 103(a)

Applicants respectfully traverse the rejection of claims 3, 4, and 6-10 under 35 U.S.C. § 103(a) on the ground that a *prima facie* case of obviousness has not been established. To establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. *See* MPEP §2143.03, 8th Ed. (Rev. 5), August, 2006. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must "be found in the prior art, and not be based on applicant's disclosure." *See* MPEP § 2143, 8th Ed. (Rev. 5), August, 2006. A *prima facie* case of obviousness has not been established because, at a minimum, the cited references, whether taken alone or in combination, fail to teach or suggest each and every element of claims 3, 4, and 6-10.

A.   Claim 6

Claim 6 recites elements similar to those recited in claims 1 and 5. Specifically, claim 6 recites a combination including "compar[ing] the position of the light source and a virtual position of a display object in a three-dimensional image displayed in real space." As discussed above, State fails to teach or suggest at least this element.

For at least the reason that State fails to teach or suggest every element recited in claim 6, a *prima facie* case of obviousness has not been established. Accordingly,

-5-

Applicants respectfully request that the Examiner withdraw the rejection of claim 6 under 35 U.S.C. § 103(a).

B.   Claims 7-10

Claims 7-10 depend from claim 5, and thus require all of the elements recited in claim 5. As discussed above, State fails to teach or suggest every element recited in claim 5. State thus also fails to teach or suggest every element required by dependent claims 7-10.

For at least the reason that State fails to teach or suggest every element required by claims 7-10, a *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 7-10 under 35 U.S.C. § 103(a).

C   Claims 3 and 4

Claim 3 recites a combination including at least "comparing the position of the light source and a virtual position of a display object in a three-dimensional image displayed in real space to obtain a relative positional relation therebetween," and "shading in the three-dimensional image [displayed in real space]. As discussed above, State fails to teach or suggest at least this element.

Drettakis fails to cure the deficiencies of State. Drettakis is directed towards augmented reality, and as shown Figures 1 and 2, only teaches augmenting images displayed on a screen, not on "a three-dimensional image displayed in real space," as recited in claim 3. Accordingly, Drettakis cannot provide a teaching or suggestion of "comparing the position of the light source and a virtual position of a display object in a three-dimensional image displayed in real space to obtain a relative positional relation

therebetween," and "shading in the three-dimensional image [displayed in real space]," as recited in claim 3.

For at least the reason that the references fail to teach or suggest every element recited in claim 3, a *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 3 under 35 U.S.C. § 103(a).

Claim 4 depends from claim 3, and thus requires all of the elements recited in claim 3. Because State and Drettakis fail to teach or suggest every element recited in claim 3, that combination of references fails to teach or suggest every element required by claim 4. A *prima facie* case of obviousness has therefore not been established. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 4 under 35 U.S.C. § 103(a).
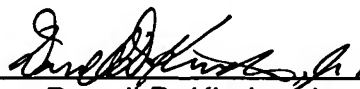
In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: February 27, 2007   By:_____
                                       Darrell D. Kinder, Jr.
                                       Reg. No. 57,460